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NEMS 6 OCT 21 RCTUL: Two new display fields added
NEMS 7 OCT 21 BIOSIS file reloaded and enhanced
NEMS 8 OCT 28 BIOSIS file segment of TOXCENTER reloaded and enhanced
NEMS 9 NOV 24 MSDS-COHS file reloaded
NEMS 10 DEC 08 CASB reloaded with left truncation
NEMS 11 DEC 08 IMS file names changed
NEMS 12 DEC 09 Experimental property data collected by CAS now available in REGISTRY
NEMS 13 DEC 09 STN Entry Date available for display in REGISTRY and CA/Caplus
NEMS 14 DEC 17 DGENE: Two new display fields added
NEMS 15 DEC 18 BIOTECNO: no longer updated
NEMS 16 DEC 19 CROPU: no longer updated; subscriber discount no longer available
NEMS 17 DEC 22 Additional INPI reactions and pre-1907 documents added to CAS databases
NEMS 18 DEC 22 IFIPAT/IFIDB/IFICDB reloaded with new data and search fields
NEMS 19 DEC 22 ABI-INFORM now available on STN
NEMS 20 JAN 27 Source of Registration (SR) information in REGISTRY updated and searchable
NEMS 21 JAN 27 A new search aid, the Company Name Thesaurus, available in CA/Caplus
NEMS 22 FEB 05 German (DE) application and patent publication number format changes
NEMS EXPRESS DECEMBER 28 CURRENT WINDOWS VERSION IS V7.00, CURRENT MACINTOSH VERSION IS V6.0b (ENG) AND V6.0b (JP),
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=> file caplus
COST IN U.S. DOLLARS

FULL ESTIMATED COST

SINCE FILE
ENTRY 0.21
TOTAL
SESSION 0.21

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FILE COVERS 1907 - 17 Feb 2004 VOL 140 ISS 8
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COST IN U.S. DOLLARS

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SINCE FILE
ENTRY 0.44
TOTAL
SESSION 0.65

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DICTIONARY FILE UPDATES: 16 FEB 2004 HIGHEST RN 651003-77-9

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2003

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=> s parahydrogen/cn
l1 PARAHYDROGEN/CN

=> s deuterium/cn
l2 DEUTERIUM/CN

09/990,537
SEARCH TRANSCRIPT
(DON'T REMOVE)

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COST IN U.S. DOLLARS
FULL ESTIMATED COST
SINCE FILE ENTRY
TOTAL SESSION
9.28 9.93

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FILE COVERS 1907 - 17 Feb 2004 VOL 140 ISS 8
FILE LAST UPDATED: 16 Feb 2004 (20040216/ED)

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=> s 11 or 12
282685 L1
52767 L2
L3 321821 L1 OR L2
=> s 13 and contrast
453450 CONTRAST
9381 CONTRASTS
461503 CONTRAST
L4 4600 L3 AND CONTRAST
(CONTRAST OR CONTRASTS)
=> s 13 and droplet
24709 DROPLETS
37077 DROPLETS
50406 DROPLET
L5 443 L3 AND DROPLET
(DROPLET OR DROPLETS)
=> s 15 and hydrogen?
257224 HYDROGENA?
L6 24 L5 AND HYDROGENA?
=> d 1-24 1b1b abs
L6 ANSWER 1 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:685893 CAPLUS
DOCUMENT NUMBER: 139:216902
TITLE: Apparatus for vaporization and condensation of organic hydride or aromatic hydrocarbon for hydrogen generation and storage device
INVENTOR(S): Koikeda, Akira; Sugai, Yasunori; Murayama, Hiroyuki; Sakuramoto, Tadashi
PATENT ASSIGNEE(S): H Two Japan K. K., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent

LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003246602	A2	20030902	JP 2002-47218	20020222
PRIORITY APPL. INFO.:				
AB	The title apparatus, for H generation by dehydrogenation of an organic hydride and		JP 2002-47218	20020222

H storage by hydrogeneration of an aromatic hydrocarbon, is equipped with a condensing part above a vaporizing part for liquefying a vaporized organic hydride or aromatic hydrocarbon on a cooling pipe of the condensing part and then vaporizing the resulting droplets on the heated vaporizing part containing a catalyst for cyclic vaporization. The apparatus, especially suitable for fuel-cell system, provides high production yield of H or the organic hydride.

L6 ANSWER 2 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:470088 CAPLUS
DOCUMENT NUMBER: 137:254564
TITLE: Anodic oxidation of chemically hydrogenated Si(100)

AUTHOR(S): Munoz, A. G.; Moehring, A.; Lohrengel, M. M.
CORPORATE SOURCE: Institut für Physikalische Chemie und Elektrochemie, Heinrich-Heine Universität Düsseldorf, Düsseldorf, D-40225, Germany

SOURCE: Electrochimica Acta (2002), 47(17), 2751-2760
CODEN: EICAAV; ISSN: 0013-4686
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The 1st oxidation stages of HF-etched Si surfaces were studied at potentials <10 V by using conventional electrochem. techniques. The use of the droplet cell allows defining areas of <10-3 cm2 and a great number of measurements can be carried out in a relative short period of time. In this way, the 1st layer transformation may be studied before the surface becomes oxidized by the air humidity, assuring a better reproducibility. Potentiodynamic measurements of surface capacity give evidence of the formation of surface states generated by an adsorption process at the beginning of oxidation. As a consequence of an increasing OH- coverage, the potential drop is gradually displaced from the semiconductor space charge layer to the Helmholtz layer with increasing pH. A model for the oxidation of the H-terminal bonds based on a charge transfer via the conduction band is proposed.

REFERENCE COUNT: 37
THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 3 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:801290 CAPLUS
DOCUMENT NUMBER: 136:21925
TITLE: Hydrogenation properties of thixotropic Al39InP/Al60B magnesium alloys
AUTHOR(S): Hong, Tae-Wan; Kim, Young-Olg
CORPORATE SOURCE: School of Metallurgical and Materials Engineering, Sungkyunkwan University, Suwon, 440-746, S. Korea
SOURCE: Metals and Materials International (2001), 7(4), 329-335
CODEN: MNIECY
PUBLISHER: Korean Institute of Metals and Materials Journal
DOCUMENT TYPE: Journal
LANGUAGE: English

L6 ANSWER 4 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:758445 CAPLUS
DOCUMENT NUMBER: 136:55521
TITLE: Fixed-Bed Hydrogenation at Su

AUTHOR(S): van den Hark, Sander; Haerrod, Magnus
CORPORATE SOURCE: Department of Food Science, Chalmers University of Technology, Goeteborg, SE-402 29, Swed.
SOURCE: Industrial & Engineering Chemistry Research (2001)

PUBLISHER:
American Chemical Society

DOCUMENT TYPE: Journal
LANGUAGE: English
AB Natural fatty alcs. are ole

AB Natural fatty acids are oleochemicals produced by catalytic hydrogenation of fatty acid H esters; in com. multiphase process H availability to the solid catalyst limits the reaction rate. Addition of supercrit. propane fluid to the reaction mixture led to a substantially homogeneous supercrit. phase whereby H has complete access to the solid catalyst. At high substrate concns., a rapid fall of the reaction rate was observed, and the benefits of supercrit. propane were completely lost. This reaction rate decrease is due to phase separation of the supercrit. reaction mixture into a substrate-rich and a hydrogen-rich phase. When the phase split occurred in systems with small catalyst particles (<120 μ m), the pressure drop over the catalyst bed increased sharply because the formed liquid droplets blocked the void space in the porous catalyst bed. These two phenomena were used to determine product and substrate solubility in the reaction mixture. The product was least soluble, and the insolub. increased with higher pressure. Under the process conditions (150 bar, 280°, and 11 mol % H), a single phase was observed up to 2 mol % (1.e., 15%) product. In addition to min. pressure in the catalyst bed, substrate transport limitation is an important factor in process optimization. Therefore, egg-shell catalysts or fine catalyst particles (100-300 μ m) should preferably be used in continuous supercrit.

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 5 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2000-84-2018
 DOCUMENT NUMBER: 114.21521
 TITLE: Process for the preparation of an MR contrast agent
 INVENTOR(S): Axelsson, Olofsson, Charlotte; Mogens-Jørgensen, Axel; Hansson, Georg; Johannesson, Haukur; Ardenkjær-Larsen, Jan Henrik

PATENT ASSIGNEE (S) : David
SOURCE : Mycomed Imaging AS, Norway
DOCUMENT TYPE : PCT Int. Appl., 27 pp.
LANGUAGE : CODEN: PIXXD2
FAMILY ACC. NUM. COUNT : Patent
PATENT INFORMATION : English
1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000071166	A2	20001130	WO 2000-GB1897	20000517
WO 2000071166	A2	20001130		

[illegible]

AB The present invention provides a process for the preparation of an MR contrast agent, said process comprising: (i) obtaining a solution in a solvent of a hydrogeneatable, unsatd. substrate compound and a catalyst for the hydrogenation of said substrate compound; (ii) introducing said solution in droplet form into a chamber containing hydrogen gas (H₂) enriched in para-hydrogen (p-H₂) and/or ortho-deuterium (o-2H₂) whereby to hydrogenate said substrate to form a hydrogenated imaging agent; (iii) subjecting said hydrogenated imaging agent to a magnetic field having a field strength below earth's ambient field strength; (iv) dissolving said imaging agent in an aqueous medium; (v) separating said catalyst from the solution of said imaging agent in said aqueous medium; (vi) separating said solvent from the solution of said imaging agent in said aqueous medium; and (vii) freezing the solution of said imaging agent in said aqueous medium. For example, o-acetyl-L-lactic acid was prepared from 2-acetoxyacrylic acid and acetone using (bicyclo[10.2.1]hepta-2,5-diene)-(1,4-bis(diphenylphosphino)butane)-rhodium(I) tetrafluoroborate as a catalyst.

L6 ANSWER 6 OF 24 CAPJUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2000:606745 CAPJUS
 DOCUMENT NUMBER: 133-199330
 TITLE: Polymer formulations for gettering hydrogen
 INVENTOR(S): Sheppard, Timothy J.; Even, William R., Jr.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. , 14 pp., Cont.-in-part of U.S. Ser. No. 182,405
 CODEN: USXXMM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

US 6110397 A 20000829 US 1999-284631 19990419
US 6083307 A 20000516 US 1998-182405 19981029
PRIORITY APPL. INFO.: US 1998-182405 A2 19981029
US 1996-716752 A3 19960923

AB A novel method for preparing a hydrogenation composition comprising organic polymer mols. having carbon-carbon double bonds, for removing hydrogen from the atmospheric within enclosed spaces and particularly from atmospheres within enclosed spaces that contain air, water vapor, oxygen, carbon dioxide or ammonia. The organic polymers mols. containing carbon-carbon double bonds throughout their structures, preferably polybutadiene, polyisoprene and derivs. thereof, intimately mixed with an insol. noble metal catalytic composition. High mol. weight polymers may be added to the organic polymer/catalyst mixture in order to improve their high temperature performance. The hydrogenation composition is prepared by dispersing the polymers in a suitable solvent, forming thereby a solution suspension, flash-freezing droplets of the solution in a liquid cryogen, freeze-drying the frozen droplets to remove frozen solvent incorporated in the droplets, and recovering the dried powder thus formed.

L6 ANSWER 7 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:449087 CAPLUS
DOCUMENT NUMBER: 133:142361
TITLE: Spatially selective materials deposition by hydrogen-assisted laser-induced transfer

AUTHOR(S): Toet, D.; Smith, P. M.; Sigmund, T. W.; Thompson, Michael O.

CORPORATE SOURCE: L-395, Lawrence Livermore National Laboratory, Livermore, CA, 94550, USA

SOURCE: Applied Physics Letters (2000), 77(2), 307-309

CODEN: APPLAB; ISSN: 0003-6951

ABSTRACT: American Institute of Physics

PUBLISHER: Journal

DOCUMENT TYPE: English

AB Si and Al lines were deposited on glass substrates using a transfer technique based on the explosive release of hydrogen from a hydrogenated amorphous Si film melted by a laser pulse. The Si lines have a min. width of 4.5 μ m and are well defined, while the Al lines are wider and less uniform. Anal. of time-resolved IR transmission signals reveals that the lines do not break into droplets upon ejection, in contrast to the behavior of unpatterned films. This difference is attributed to the escape of hydrogen through the sides of the molten lines into the adjacent material.
REFERENCE COUNT: 8
THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 8 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:179100 CAPLUS
DOCUMENT NUMBER: 132:258635

TITLE: Experimental and numerical investigations of a hydrogen-assisted laser-induced materials transfer procedure

AUTHOR(S): Toet, D.; Smith, P. M.; Sigmund, T. W.; Thompson, M. O.

CORPORATE SOURCE: L-271, Lawrence Livermore National Laboratory, Livermore, CA, 94550, USA

SOURCE: Journal of Applied Physics (2000), 87(7), 3537-3546

CODEN: JAPINP; ISSN: 0021-8979

ABSTRACT: American Institute of Physics

PUBLISHER: Journal

DOCUMENT TYPE: English

AB We present investigations of the mechanisms of a laser-induced transfer technique, which can be used for the spatially selective deposition of materials such as Si. This transfer is effected by irradiating the backside of a hydrogenated amorphous Si film, deposited on a

transparent substrate with an excimer laser pulse. The resulting release and accumulation of H₂ at the film/substrate interface propels the Si onto an adjacent receptor water. Time-resolved IR transmission measurements indicate that the amorphous film is melted by the laser pulse and breaks into droplets during ejection. These droplets travel towards the receptor substrate and coalesce upon arrival. The transfer velocity increases as a function of fluence, the rate of increase dropping noticeably around the full melt threshold of the film. At this fluence, the transfer velocity reaches values of ~1000 m/s for typical films. AFM reveals that films transferred below the full melt threshold only partially cover the receptor substrate, while uniform, well-adhering films, which can be smoothed by subsequent laser irradiation, are obtained above it. Transfer of H-free Si films, on the other hand, does not occur until much higher fluences. The dynamics of the process were simulated using a semiquant. numerical model. In this model, H₂ released from the melt front is instantaneously accumulated at the interface with an initial kinetic energy given by the melting temperature of Si and the enthalpy of solution

The resulting pressure accelerates the Si film, the dynamics of which are modeled using Newtonian mechanics, and the gas cools adiabatically as its kinetic energy is converted to the film's momentum. The results of the calcs. are in good agreement with the expl. data.
REFERENCE COUNT: 25
THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 9 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:532187 CAPLUS
DOCUMENT NUMBER: 131:303808

TITLE: Enhanced GaN decomposition at MOVPE pressures

AUTHOR(S): Koleske, D. D.; Wickenden, A. E.; Henry, R. L.; Twigg, M. E.; Culbertson, J. C.; Gorman, R. J.

CORPORATE SOURCE: Electronic Science and Technology Division, Naval Research Laboratory, Washington, DC 20375, USA

SOURCE: MRS Internet Journal of Nitride Semiconductor Research (Electronic Publication) (1999), 4S1, No pp. Given

CODEN: MIJNFF; ISSN: 1092-5783

URL: http://nstr.mlr.mrs.org/4S1/63_70/article.pdf

ABSTRACT: Materials Research Society

LANGUAGE: Journal; (online computer file)

AB GaN decomposition was studied above 800 °C in flowing H₂ and N₂ for pressures ranging from 10- to 700 torr. From careful weighings of the GaN film on sapphire before and after annealing, the rates for GaN decomposition, Ga surface accumulation, and Ga desorption were obtained. An enhancement in the GaN decomposition rate was observed in H₂ pressures greater than 100 torr.

Even with this enhanced GaN decomposition, the Ga desorption rate is nearly constant at higher pressures. As a result, Ga droplets accumulate on the surface. For N₂ pressures ranging from 76 to 400 torr no net enhancement in the GaN decomposition rate is observed and the GaN decomposition rate is reduced compared to identical annealing conditions in H₂. This suggests that H₂ is acting chemical to reduce the barrier for GaN decomposition. This

may occur through a surface mediated dissociation of H₂ followed by the formation of more mobile and volatile hydrogenated N and Ga species. The

significance of this study for GaN growth is that by increasing the GaN decomposition, the Ga atoms diffuse farther and subsequently re-incorporate into the growing lattice, increasing the GaN crystal quality. Connections between the enhanced GaN decomposition rate and the coalescing of nucleation layer during the ramp to high temperature and the consequences for the high temperature growth are discussed.
REFERENCE COUNT: 32
THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 10 OF 24 CAPLUS COPYRIGHT 2004 ACS ON STN
ACCESSION NUMBER: 1999:228140 CAPLUS
DOCUMENT NUMBER: 130:343517
TITLE: Laser-assisted transfer of silicon by explosive hydrogen release

AUTHOR(S): Toet, D.; Thompson, Michael O.; Smith, P. M.; Sigmom, T. W.

CORPORATE SOURCE: L-271, Lawrence Livermore National Laboratory, 7000

SOURCE: East Avenue, Livermore, CA, 94550, USA
Applied Physics Letters (1999), 74(15), 2170-2172
CODEN: APPLAB; ISSN: 0003-6951

PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal

LANGUAGE: English

AB A technique is presented for the transfer of silicon thin films. This transfer is effected by irradiating a hydrogenated amorphous silicon film deposited on a quartz substrate with an excimer laser pulse. The resulting release and accumulation of hydrogen at the film/substrate interface generates pressures sufficient to propel the silicon onto an adjacent glass receptor wafer. Transient optical transmission measurements indicate that the amorphous film is melted by the laser pulse and breaks into droplets during ejection. For fluences above 400 mJ/cm², the transferred films adhere well to the receptors and can be smoothed using a second laser irradiation above the fluences above

REFERENCE COUNT: 10
THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 11 OF 24 CAPLUS COPYRIGHT 2004 ACS ON STN
ACCESSION NUMBER: 1998:578898 CAPLUS
DOCUMENT NUMBER: 129:279912

TITLE: Micro-Raman study of reactive pulsed laser ablation deposited silicon carbon alloy films

AUTHOR(S): Tuneso, Sebastiano; Vasi, Cirino; Barreca, Francesco; Meri, Fortunato

CORPORATE SOURCE: Istituto di Tecnica Spettroscopica, CNR, Saita

SOURCE: Sperone 31, Messina, I-98166, Italy
Journal of Vacuum Science & Technology, A: Vacuum, Surfaces, and Films (1998), 16(5), 3020-3024
CODEN: JVTADE; ISSN: 0734-2101

PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal

LANGUAGE: English

AB Si_{1-x}C_xH alloy thin films were deposited by pulsed laser ablation of a crystalline silicon target in a reactive environment. The microstructure of the films was studied by means of SEM images and spatially resolved Raman spectroscopy. The films were found to consist of mixed microcrystalline and amorphous phases, with a silicon crystallite size of 5-6 nm. Incorporation of carbon and hydrogen was found to occur mainly in the amorphous phase. Results showed that films growth is given by deposition of atomic and mol. sized material reacting with ionized species. Some inhomogeneities observed in the SEM images were attributed to rapid cooling of liquid droplets ejected from the target.

REFERENCE COUNT: 35
THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 12 OF 24 CAPLUS COPYRIGHT 2004 ACS ON STN
ACCESSION NUMBER: 1996:700049 CAPLUS
DOCUMENT NUMBER: 126:122948

TITLE: Segregation of In atoms at clean and hydrogen passivated InP(100) surfaces

AUTHOR(S): Stietz, F.; Allinger, Th.; Polyakov, V.; Moll, J.; Goldmann, A.; Erturh, W.; Lapeyre, G. J.; Schaefer, J. A.

CORPORATE SOURCE: Fachbereich Physik, Universitaet Kassel, Kassel, D-34132, Germany

SOURCE:

Applied Surface Science (1996), 104/105(Proceedings of the Fifth International Conference on the Formation of Semiconductor Interfaces, 1995), 169-175
CODEN: ASUSOE; ISSN: 0169-4332

PUBLISHER: Elsevier
DOCUMENT TYPE: Journal

LANGUAGE: English

AB The InP(100) surfaces cleaned by ion bombardment and annealing (IBA) are known to be In-rich. Exposure to atomic hydrogen gives rise to an even higher In surface content. The nature of these In atoms at the clean and at the passivated surface was characterized by the techniques of UV and XPS (UPS, XPS) as well as LEIS, SEM, energy dispersive X-ray spectroscopy (EDX), and high-resolution electron energy-loss spectroscopy (HREELS). The heavily hydrogenated surface is dominated by metallic droplets of In. Line shape anal. can sep. the contributions from these droplets and the nonmetallic area in between, giving new insight into band bending at this surface. It is argued that the clean surface consists of In atoms bound in dimers. HREELS-spectra exhibit an interface plasmon at 93 meV, from which the carrier concentration can be directly determined via dielec. theory. Passivation of InP with atomic hydrogen shifts the plasmon energy to lower values. Finally, hydrogenation makes it possible to create particles from nanometer- to micrometer-size.

L6 ANSWER 13 OF 24 CAPLUS COPYRIGHT 2004 ACS ON STN
ACCESSION NUMBER: 1995:952391 CAPLUS
DOCUMENT NUMBER: 124:64180

TITLE: MeC:CH-coatings produced by arc-ion plating process

AUTHOR(S): Repenning, D.

CORPORATE SOURCE: O.M.T., Oberflaechen und Materialtechnologie GmbH, Huebeck, 23569, Germany

SOURCE: Video Science, Technique et Applications (1995), 51(276), 197-209
CODEN: VSTARH; ISSN: 1266-0167

PUBLISHER: Societe Francaise du Vide
DOCUMENT TYPE: Journal

LANGUAGE: English

AB A wide range parameter set for the production of MeC:CH (metal carbide:CH) coatings was investigated. Some fundamental aspects to correlate film properties to large scale production conditions are presented. The MeC:CH films were prepared by simultaneous metal-arc evaporation and by plasma decomposition of C2H2. The metal carbide:CH systems examined were Cr2C3:CH, NbC:CH, TiC:CH, TiN/C:CH (Ti 80, W 20 atomic%) and (Ti,Nb)C:CH (Ti 80, Nb 20 atomic%). The metal coatings examined, especially the hard chromium-carbon layer, were deposited as layers with constant phys. and chemical properties even on complex shaped substrates. The best friction/wear characteristics are found with the chromium and titanium-tungsten films. In general the arc metal-carbon layers had similar friction and wear behavior as the hard carbon coating deposited by other deposition techniques. The coatings with the best reliability are obtained with a chemical composition near the metal carbide phase. An evident disadvantage of the arc layers results if they are deposited with a high amount of droplets as found in the TiC:CH and (Ti,Nb)C:CH layers.

L6 ANSWER 14 OF 24 CAPLUS COPYRIGHT 2004 ACS ON STN
ACCESSION NUMBER: 1995:512627 CAPLUS
DOCUMENT NUMBER: 123:94149

TITLE: Core-level photoemission study of hydrogenated GaAs(100) surfaces

AUTHOR(S): Stietz, F.; Sloboshanin, S.; Engelhard, H.; Allinger, Th.; Goldmann, A.

- CORPORATE SOURCE:**
Fachbereich Physik, Univ. Kassel, Kassel, D-34132, Germany
SOURCE:
Solid State Communications (1995), 94(8), 643-7
CODEN: SSCOM4; **ISSN:** 0038-1098
- PUBLISHER:**
Elsevier
DOCUMENT TYPE:
Journal
LANGUAGE:
English
- AB** The interaction of atomic hydrogen with GaAs(100) surfaces has been studied at room temperature by means of photoelectron spectroscopy using synchrotron radiation. Atomic hydrogen produces drastic changes in the line shape of the As_{3d} and Ga_{3d} core levels and changes in the As/Ga intensity ratio. A least-squares fit routine for line shape anal. enables the identification of different contributions. They show the breaking of Ga-dimers in the low exposure region (<10² L) and the formation of Ga- and As-hydrides between 10² L and 10⁴ L. In addition the build up of metallic Ga-droplets after higher exposures is shown. The intensity ratio of As_{3d} to Ga_{3d} indicates an As-enrichment due to Ga-hydride desorption and Ga-droplet formation.
- L6 ANSWER 15 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1994:143970 CAPLUS
DOCUMENT NUMBER: 120:143970
TITLE:
Role of the solvent-diffusion-rate modifier in a new emulsion solvent diffusion method for preparation of ketoprofen microspheres
AUTHOR(S):
Hino, T.; Kawashima, Y.; Iwamoto, T.; Niwa, T.; Takeuchi, H.; Pharm. Eng. Dep., Gifu Pharm. Univ., Gifu, 502, Japan
CORPORATE SOURCE:
Journal of Microencapsulation (1993), 10(3), 329-40
SOURCE:
CODEN: JOMIEF; **ISSN:** 0265-2048
- DOCUMENT TYPE:**
Journal
LANGUAGE:
English
- AB** A new emulsion solvent diffusion method to prepare the microspheres of ketoprofen with an acrylic polymer was developed by utilizing sugar esters as solvent diffusion modifiers. The microspheres were produced via transient o/w emulsion droplets of the polymer, which was formed by the interaction of drug and water-miscible organic solvent, e.g. ethanol. The solvent consisting in oil droplets diffused into the outer aqueous medium. In the droplets, ethanol interacted with ketoprofen via hydrogen bonding between -OH group of ethanol and both -COOH and -CO groups of ketoprofen. These hydrogen bonds made ethanol solution strongly hydrophobic. The sugar ester added in the ethanol could inhibit such intermol. interaction between ethanol and the -CO group of ketoprofen. Modulation in the binding force of ketoprofen-ethanol by the sugar ester contributed to achieving a desirable initial ethanol diffusion rate from the oil droplets for the formation of ketoprofen microspheres with high yield (>85%) and drug entrapment ratio (>90%).
- L6 ANSWER 16 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1993:638873 CAPLUS
DOCUMENT NUMBER: 119:238873
TITLE:
Etching of indium phosphide (100) 4 + 2 and molecular-beam epitaxially grown gallium arsenide (100)-c(4x4) with atomic hydrogen
AUTHOR(S):
Schaefer, J. A.; Stietz, F.; Moll, J.; Wu, H. S.; Yu, H.; Lapeyre, G. J.; Univ. Kassel, Kassel, D-3500, Fachbereich Phys., Univ. Kassel, Kassel, D-3500, Germany
CORPORATE SOURCE:
Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1993), 11(4), 1497-501
SOURCE:
CODEN: JVTBD9; **ISSN:** 0734-211X
- DOCUMENT TYPE:**
Journal
LANGUAGE:
English
- AB** Phonon, plasmon, and vibrational modes of clean and hydrogenated mol.-beam epitaxially grown As-rich GaAs(100)-c(4x4) and 100-Dombaried and annealed InP(100) 4x2 were studied with high-resolution EELS. The plasmon energy at the interface of depletion layer and bulk enabled one to determine the carrier concentration for Si-doped GaAs samples.
- With increasing H exposure characteristic changes in plasmon energy, its intensity and the intensity of the surface optical phonons were observed. This is explained by changes in the space charge regime. Using H as a local probe provides sensitivity to the stoichiometry and to the chemical bonding situation at the uppermost surface layer. The As-terminated GaAs(100) surface can be converted finally into a Ga-terminated surface by etching with atomic H. For InP, for the very 1st time an interface plasmon was observed at 90 meV, due to high S doping. In contrast to GaAs, sequential hydrogenation gave metallic droplets (In), which increase in size and concentration with increasing H exposure. Consequently, the phonon and plasmon intensities are reduced drastically. Models of the atomic surface structures for different stages of hydrogenation are discussed.
- L6 ANSWER 17 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1992:534414 CAPLUS
DOCUMENT NUMBER: 117:134414
TITLE:
Open-circuit voltage enhancement in MIS solar cells by thin plasma-grown tunneling oxides
AUTHOR(S):
Weiler, J.; Kragler, G.; Willeke, G.; Bucher, E.; Kepner, H.; Fischer, D.; Viret, V.; Shah, A. V.; Fak. Phys., Univ. Konstanz, Konstanz, D-7750, Germany
CORPORATE SOURCE:
E. C. Photovoltaic Sol. Energy Conf., Proc. Int. Conf., 10th (1991), 192-5. Editor(s): Luque, Antonio. Kluwer: Dordrecht, Neth.
SOURCE:
CODEN: 57SCA6
- DOCUMENT TYPE:**
Conference
LANGUAGE:
English
- AB** A microwave water vapor and O plasma were used to oxidize hydrogenated amorphous Si(a-Si:H) at low temps. The grown oxides were analyzed by Auger electron spectroscopy (AES), ellipsometry, and by determination of the wetting angle with a water droplet. A typical thickness of 16 Å was obtained from AES SiO₂/Si peak ratios as compared with 11 Å obtained by ellipsometric studies. As expected, the plasma oxide reduces the MIS forward and reverse dark current and leads to an increase in open-circuit voltage (Voc) and short-circuit current. The photocurrent enhancement is due to an increased blue response of the cell. The most pronounced effect of the plasma grown oxide was observed on devices with lightly p-doped i-layers. As demonstrated earlier Pt/SiO₂/i-n+ a-Si:H MIS solar cells with open-circuit voltages <900 mV and air-mass 1.5 efficiencies of 5% have been obtained. The Voc of cells stored for 3 yr remained nearly constant.
- L6 ANSWER 18 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1989:622784 CAPLUS
DOCUMENT NUMBER: 111:22784
TITLE:
Hydrogen passivation of acceptors in p-indium phosphide
AUTHOR(S):
Dauremont-Smith, W. C.; Lopata, J.; Pearton, S. J.; Kozzi, L. A.; Stavola, N.; Swaminathan, V.; AT and T Bell Lab., Murray Hill, NJ, 07974, USA
CORPORATE SOURCE:
Journal of Applied Physics (1989), 66(5), 1993-6
SOURCE:
CODEN: JAPPAU; **ISSN:** 0021-8979
- DOCUMENT TYPE:**
Journal
LANGUAGE:
English
- AB** The problem of hydrogenation of InP without surface degradation has been surmounted by exposure of the InP surface to a hydrogen plasma through a thin SiNx(H) cap layer. This layer is H permeable at the hydrogenation temperature of 250°C but P or PH₃ impermeable, thus minimizing PH₃ loss and the attendant In droplet formation. In

contrast to the results for this type of plasma exposure of GaAs, shallow acceptors in InP are heavily passivated, whereas shallow donors are only very weakly affected. For example, p-InP (2n of 3 + 1014 cm⁻³ has its residual hole concentration reduced to 53 + 1014 cm⁻³ over a depth of 1.3 μm by a 250°C, 0.5 h deuteration. The presence of acceptors impedes H (or D) indiffusion, as indicated by D diffusion under the same conditions occurring to depths of 18 and 35 μm in p-InP (2n, 2 + 1016 cm⁻³) and n-InP (S or Sn), resp. Annealing for 1 min at 350°C causes the acceptor passivation to be lost and the hole concentration to be returned to its prehydrogenation level, indicating that the passivation has similar thermal stability to that of acceptors in GaAs, but lower than that of donors.

L6 ANSWER 19 OF 24 CAPLUS COPYRIGHT 2004 ACS ON STN
ACCESSION NUMBER: 1989:1218019 CAPLUS
DOCUMENT NUMBER: 110:218019
TITLE: Manufacture of high-softening point pitch and mesophase pitch for the production of high-performance carbon fibers

INVENTOR(S): Teuchitani, Masatoshi; Tamura, Makoto; Suzuki, Kiyotaka; Okada, Shuji; Nakajima, Yoichi; Naito, Sakae
PATENT ASSIGNEE(S): Maruzen Petrochemical Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 45 pp.
DOCUMENT TYPE: Patent
FAMILY ACC. NUM. COUNT: 1
LANGUAGE: English
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 299222	A1	19890118	EP 1988-109645	19880616
EP 299222	B1	19920408		
JP 6331789	A2	19881226	JP 1987-152064	19870618
JP 04000513	B4	19920107		
JP 01129092	A2	19890522	JP 1987-287173	19871113
JP 04008474	B4	19920217		
CA 1302934	A1	19920609	CA 1988-568935	19880608
AU 8817709	A1	19881222	AU 1988-17709	19880616
AU 603223	B2	19901108		
EP 393724	A1	19901024	EP 1990-109689	19880616
EP 393724	B1	19930512		
R: DE, FR, GB, IT, NL				
CN 103156	A	19890308	CN 1988-103678	19880618
CN 1020621	B	19920512		
US 5091072	A	19920225	US 1990-504723	19900403
AU 9060958	A1	19901115	AU 1990-60958	19900810
AU 624986	B2	19920625		
US 5182011	A	19930126	US 1990-616836	19901121
CN 1072442	A	19930526	CN 1992-112544	19921031
CN 1032922	B	19961002		

PRIORITY APPLM. INFO.:

AB The manufacture of the high-softening point pitch comprises dispersing a heavy oil or pitch in a stream of inert gas or superheated vapor as fine oil droplets, and contacting the droplets with the gas or vapor at 350-500° under reduced or standard pressure. The manufacture of the mesophase pitch comprises (A) using, as a raw material, a heavy oil or coat- or petroleum-based pitch substantially free of material insol. in a monocyclic aromatic hydrocarbon solvent (MAHS), and (B) subjecting the raw

material to a continuous 4-stage treatment comprising (a) a 1st stage, in which the material is heated in a tubular heater under increased pressure at 400-600° to produce 3-30 weight % xylene-insols. (XI) without producing quinoline insols. (QI), (b) a 2nd stage, in which the heat-treated material is distilled or flashed at <350° (converted to standard pressure) to remove a portion of light fractions and to obtain a thermally cracked heavy component (TCHC), (c) a 3rd stage, in which 1-5 times by weight of a MAHS or other solvent (having the same dissoln. capabilities as the MAHS) is added, and separating and collecting an insol. component to obtain a high-mol. weight bituminous material (HBMW), and (d) a 4th stage, in which the solvent is removed from the mother liquor, obtained from the mixture of the solvent and the TCHC by removing the insol. component therein, to obtain a component soluble in the MAHS, while recycling all or part of the soluble component of stages 4 to stage 1. The HBMW of step 3 is hydrogenated by heat treatment with a H-donating solvent, and the solvent is removed to obtain an optically isotropic hydrogenated pitch, which is heat-treated to obtain the mesophase pitch. This process is especially suitable for the manufacture of a spinning pitch.

for the manufacture of C fibers. Under described process conditions, coal tar was refined to give a heavy component having sp. gr. 1.181, viscosity at 100° 28.3 cSt, XI 1.9, and QI <0.1, and initial b.p. 220°, 10 volume % 304°, 30 volume % 372, and 50 volume % 435. This heavy component was processed to give an anisotropic, mesophase pitch having Mettler softening point 302°, XI 94.8 and QI 3.6 weight %, was spun to give C fibers (diameter 8.0 μm) having tensile strength 292 kg/mm² and modulus of elasticity 16.4 ton/mm².

L6 ANSWER 20 OF 24 CAPLUS COPYRIGHT 2004 ACS ON STN
ACCESSION NUMBER: 1988:640524 CAPLUS
DOCUMENT NUMBER: 109:240524
TITLE: Study on hydrophobic amorphous fluorinated, hydrogenated carbon overcoat layer for amorphous hydrogenated silicon photoceptor

AUTHOR(S): Ishikawa, Fumio; Tanahashi, K.; Chigasaki, M.; Onuma, S.; Wakagi, M.; Ohno, T.; Shimamura, Y.; Yamagishi, C.
CORPORATE SOURCE: Hitachi Res. Lab., Hitachi Ltd., Hitachi, Japan
SOURCE: Materials Research Society Symposium Proceedings (1988), 118(Amorphous Silicon Technol.), 429-34
CODEN: MRSPDH; ISSN: 0272-9172

DOCUMENT TYPE: Journal

AB An amorphous C:H:F overcoat layer was investigated to counter the problem of blurring caused by image degradation in a-Si:H photoceptors during repetitions of electrophotog. processes. The film was deposited by glow discharge decomposition of C₂F₆-H₂ mixture. The hydrophobic property of the film was estimated by contact angle of water droplets. The contact angle of a-C:H:F was larger than that of a-SiC:H, especially after 5 h corona exposure treatment. In the printing test, the blurring life-time of a-C:H:F overcoated a-Si:H photoceptor was approx. 9 times longer than that of a-SiC:H overcoated one.

L6 ANSWER 21 OF 24 CAPLUS COPYRIGHT 2004 ACS ON STN
ACCESSION NUMBER: 1988:530601 CAPLUS
DOCUMENT NUMBER: 109:130601
TITLE: Process and catalysts for the selective hydrogenation of alkynes impurities in butadiene-rich C₄ fractions

INVENTOR(S): Debras, Guy L. G.; De Clippetier, Georges E. M. J.; Cahen, Raymond M.; Grootjans, Jacques F.; Labofina S. A.; Bels, Ger. Offen., 11 pp.

DOCUMENT TYPE: CODEN: GWXXEX
LANGUAGE: Patent
FAMILY ACC. NIM. COUNT: 1
PATENT INFORMATION: German

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3744086	A1	19880714	DE 1987-3744086	19871224
DE 3744086	C2	20000504		
GB 2195868	A1	19880713	GB 1986-31017	19861230
GB 2195868	B2	19901205		
JP 63185935	A2	19880801	JP 1987-328448	19871226
JP 2560056	B2	19861204		
FR 2609023	A1	19880701	FR 1987-18223	19871228
FR 2609023	B1	19881020		
NL 8703157	A	19880718	NL 1987-3157	19871229
FI 8705774	A	19880701	FI 1987-5774	19871230
FI 87453	B	19920930		
C	19930111			
BE 1000871	A4	19890425	BE 1987-1501	19871230
CA 1290354	A1	19911008	CA 1987-555579	19871230

PRIORITY APPL. INFO.:
GB 1986-31017 19861230
CA 1987-555579 19871230

AB Alkyl impurities are removed from 1,3-butadiene-rich C4 fractions, useful in rubber manufacture, by passing droplets of the fraction over a Pd-containing catalyst bed in the presence of H₂, removing the excess H₂, and isolating the butadiene-rich product. A fraction containing 44.63 parts butadiene, 49.89 parts butene, 3.92 parts butane, 768 ppm vinylacetylene (I), and 1882 ppm ethylacetylene (II) was hydrogenated over a Pd compound catalyst supported on Al₂O₃ at 57.5°/0.61 MPa at liquid hourly space velocity 14.2 L/L-h, giving a product containing <5 ppm I and 10 ppm II.

L6 ANSWER 22 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1988:502750 CAPLUS
DOCUMENT NUMBER: 109:102750

TITLE: Preparation of ductile niobium-aluminum powders for the fabrication of niobium-aluminum (Nb3Al)

AUTHOR(S): Schulze, K.; Mueller, G.; Petrow, G.
CORPORATE SOURCE: Inst. Werkstoffwiss., Max-Planck-Inst. Metallforsch., Stuttgart, D-7000/80, Fed. Rep. Ger.
SOURCE: Journal of the Less-Common Metals (1988), 139(1), 97-106

CODEN: JCOMAH; ISSN: 0022-5088

DOCUMENT TYPE: Journal
LANGUAGE: English

AB The influence of rapid quenching and hydrogenation on the structure and phase composition of Nb-rich Nb-Al alloys was investigated. Starting ingots were prepared by conventional arc melting of compacted powder mixts. The phase diagram for Nb-Al of Jorda et al. (1980) was confirmed in the examined concentration range up to approx. 30 atomic% Al.

Specimens were quenched with cooling rates not less than 104 K s⁻¹, both from the solid and liquid state. A metastable extension of the Nb solid solution up to 27 atomic% Al was obtained after quenching small droplets from temp. >2200°. Rapid quenching of solids (19-24 atomic% Al) from 1750° in a eutectic Ca-In bath does not lead to the formation of metastable states in the region of the Nb3Al phase. Ductile Nb-Al powders of an average composition Nb3Al were prepared with a combined hydriding-dehydriding process. The retransformation of the metastable powders was determined to occur at 710 to 860° depending on the Al concentration. Based on these findings, a new perspective results for the powder metallurgical fabrication of Nb3Al superconductors.

L6 ANSWER 23 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1988:113002 CAPLUS
DOCUMENT NUMBER: 108:113002

TITLE: Improvement of waste gas treatment in the manufacture of cyclohexanone

AUTHOR(S): Ershov, A. I.; Kalishuk, D. G.; Shalderman, M. F.; Prokashov, S. K.; Govako, E. M.

CORPORATE SOURCE: USSR

LANGUAGE: Russian
CODEN: KPRMAM; ISSN: 0023-110X

AB The concentration of cyclohexane (I) in the waste gas produced during its manufacture from C6H6 was reduced to 0.2 mol% and 75% I in this gas was recovered by passing it through a straight flow centrifugal scrubber having sieve plates, filled with an absorbing cyclohexanol-cyclohexanone mixture. Both suspended droplets of I and I vapor were removed from the waste gas at gas throughput rate 600-1400 m³/h with absorbing mixture carryover <0.0003 kg/kg. The entire process comprised a I → cyclohexanone → caprolactam manufacturing sequence.

L6 ANSWER 24 OF 24 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1980:434893 CAPLUS
DOCUMENT NUMBER: 93:34893

TITLE: Chlorophyll a sensitized redox processes in microemulsion systems

AUTHOR(S): Kiwi, J.; Graetzel, M.
CORPORATE SOURCE: Inst. Chm. Phys., Ec. Polytech. Fed. Lausanne, Switz.

LANGUAGE: English
CODEN: JPCCHX; ISSN: 0022-3654

AB A chlorophyll a-containing microemulsion was prepared based on 80% H₂O weight/weight and Na hexadecyl sulfate, hexadecane, 1-pentanol, and chlorophyll a (I). The droplet radius was determined by autocorrelated Rayleigh scattering to be 130 Å. By using a pulsed ruby laser (λ 694 nm) the triplet spectrum of I was measured. It peaks around 465 nm and shows min. due to ground-state bleaching at 430 and 420 nm. I triplet reduces methylviologen (II) with a specific rate constant of 4 × 10⁸ M⁻¹s⁻¹. At 5 × 10⁻³ M II the efficiency of this process is unity. The cation radical I⁺ reacts with both ascorbate and NADH. In the latter case I can sensitize irreversible electron transfer from NADH to II. If this system is coupled with a suitable hydrogenation catalyst, H evolution from H₂O can be observed.

=> s parahydrogen and (droplets or spray) and hydrogen?

789 PARAHYDROGEN

37077 DROPLETS

108439 SPRAY

27226 SPRAYS

123949 SPRAY (SPRAY OR SPRAYS)

257224 HYDROGENA?

L7 0 PARAHYDROGEN AND (DROPLETS OR SPRAY) AND HYDROGENA?

=> s parahydrogen and hydrogen?

789 PARAHYDROGEN

257224 HYDROGENA?

L8 71 PARAHYDROGEN AND HYDROGENA?


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=> s 18 and into
2349001 INTO
6 INTOS
2349006 INTO
(INTO OR INTOS)

L9 7 L8 AND INTO

=> d 1-7 1bib abs
'ABS' IS NOT A VALID FORMAT FOR FILE 'CAPLUS'.
The following are valid formats:

ABS ----- GI and AB
ALL ----- BI, AB, IND, RE
APPS ----- AI, PRAI
BIB ----- AN, plus Bibliographic Data and PI table (default)
CAN ----- List of CA abstract numbers without answer numbers
CBI1 ----- AN, plus Compressed Bibliographic Data
DAL1 ----- ALI, delimited (end of each field identified)
DMAX ----- MAX, delimited for post-processing
FAM ----- AN, PI and PRAI in table, plus Patent Family data
FBIB ----- AN, BIB, plus Patent FAM
IND ----- Indexing data
IPC ----- International Patent Classifications
MAX ----- ALI, plus Patent FAM, RE
PATS ----- PI, SO
SAM ----- CC, SX, TI, ST, IT
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e.g., D SCAN or DISPLAY SCAN)
STD ----- BIB, IPC, and NCL

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IBIB ----- BIB, indented with text labels
IMAX ----- MAX, indented with text labels
ISTD ----- STD, indented with text labels

OBIB ----- AN, plus Bibliographic Data (original)
OIBIB ----- OIBI, indented with text labels

SBIB ----- BIB, no citations
SIBIB ----- IBIB, no citations

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HITSTR ----- HIT RN, its text modification, its CA index name, and
its structure diagram
HITSEQ ----- HIT RN, its text modification, its CA index name, its
First HIT RN, its text modification, its CA index name, and
its structure diagram
FHTSTR ----- First HIT RN, its text modification, its CA index name, and
its structure diagram
FHTSEQ ----- First HIT RN, its text modification, its CA index name, its
structure diagram, plus NTB and SEQ fields
KWIC ----- Hit term plus 20 words on either side
OCC ----- Number of occurrence of hit term and field in which it occurs

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TI,IND; TI,SO. You may specify the format fields in any order and the
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All of the formats (except for SAM, SCAN, HIT, HITIND, HITRN, HITSTR,
FHTSTR, HITSEQ, FHTSEQ, KWIC, and OCC) may be used with DISPLAY ACC
to view a specified Accession Number.
ENTER DISPLAY FORMAT (BIB):end

=> d 1-7 1bib abs

L9 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:822290 CAPLUS
DOCUMENT NUMBER: 140:69468
TITLE: Hyperpolarization transfer from parahydrogen
AUTHOR(S): Aime, Silvio; Gobetto, Roberto; Reineri, Francesca;
Canet, Daniel
CORPORATE SOURCE: Dipartimento di Chimica I.F.M. and Molecular Imaging
Centre, Universita degli Studi di Torino, Turin,
10125, Italy
SOURCE: Journal of Chemical Physics (2003), 119(17), 8890-8896
CODEN: JCPHSA6; ISSN: 0021-9606
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Hyperpolarization arising from para-hydrogen (p-H2) can be transferred via
carbon-13 to deuterium after hydrogenation of a perdeuterated
substrate. The model compound is acetylene-d2, hydrogenated to
yield ethylene-d2. Transfer to deuterium occurs in ALTADENA expts. (the
hydrogenation reaction being performed outside the magnet of the
NMR spectrometer prior to the insertion of the sample tube into
the NMR probe). The proposed theory, limited to the case where the two
p-H2 protons remain isochronous (same chemical shift), is based on the
concept of a steady-state d. operator which prevails subsequently to the
hydrogenation reaction. The outcome quantity is the
carbon-deuterium longitudinal spin order, denoted as IZCID. Calcs.
simply involve commutators of all relevant spin quantities with the
J-coupling Hamiltonian (denoted as HJ). In particular, the necessary
condition for polarization transfer toward deuterium via carbon-13 is that
IZCID does not commute with HJ. The structure of HJ is thus of prime
importance and it appears that transfer to carbon-13 occurs for both types
of expts., ALTADENA and PASADENA (hydrogenation reaction in the
presence of the NMR spectrometer magnetic field). Conversely, transfer
toward deuterium via carbon-13 is possible only with ALTADENA expts.
REFERENCE COUNT: 17
THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:174557 CAPLUS
DOCUMENT NUMBER: 136:394709
TITLE: The toroid cavity autoclave for high-pressure and
variable-temperature in situ nuclear magnetic
resonance studies
AUTHOR(S): Niessen, Helko G.; Trautner, Peter; Wiemann, Sabine;
Bargon, Joachim; Moell, Klaus
CORPORATE SOURCE: Institute of Physical and Theoretical Chemistry,
University of Bonn, Bonn, D-53115, Germany
SOURCE: Review of Scientific Instruments (2002), 73(3, Pt. 1),
1259-1266
CODEN: RSINAK; ISSN: 0034-6748
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The toroid cavity autoclave (TCA) is a coaxial NMR resonator and
high-pressure autoclave for in situ NMR studies, which combines the
advantages of a toroid NMR detector with the features of a cylindrical
metal pressure vessel. It is designed to fit within the limited space of

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a standard NMR narrow-bore cryomagnet and allows for recording high resolution NMR spectra during chemical reactions under high pressure. Comps. that, for example, initiate a reaction can be injected into the reactor through a nonreturn valve even if the RCA is already pressurized. The RCA is heated by a resistive, coaxial heating arrangement that does not generate any stray magnetic field in the sample volume. Current pressure and temperature capabilities are 0-300 bar and room temperature to 150°, resp. With standard 200 MHz ¹H NMR expts., signal resolution of 0.55 Hz and signal-to-noise ratios comparable to those of standard NMR probes were achieved. In a further development, the RCA is optimized for gas/liquid reactions in which gaseous components are vigorously mixed with the liquid to obtain maximum reaction rates. Applications to parahydrogen induced polarization are shown, in which the nuclear spin polarization patterns show pairwise addition of hydrogen in both liquid organic solvents and in supercrit. CO₂.

REFERENCE COUNT: 27

THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 3 OF 7 CAPLUS COPYRIGHT 2004 ACS on STM
ACCESSION NUMBER: 2000:374255 CAPLUS
DOCUMENT NUMBER: 133:134947
TITLE: Mechanistic aspects of dihydrogen activation and transfer during asymmetric hydrogenation in supercritical carbon dioxide

AUTHOR(S):

CORPORATE SOURCE:

SOURCE:

PUBLISHER:

DOCUMENT TYPE:

LANGUAGE:

AB A new "CO₂-philic" chiral rhodium diphosphinite complex was synthesized and applied as catalyst precursor in the asym. hydrogenation of di-Me itaconate in sCCO₂, sCCaH₆ and various liquid organic solvents. Deuterium labeling studies and parahydrogen-induced polarization (PHIP) NMR expts. were used to provide the first detailed mechanistic insight into the activation and transfer of the dihydrogen mol. during hydrogenation in sCCO₂. Chemical interactions between CO₂ and reactive intermediates of the catalytic pathway could be excluded as possible explanations for the exptl. verified difference in the catalytic behavior in sCCO₂ and hexane.

REFERENCE COUNT: 43

THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2004 ACS on STM
ACCESSION NUMBER: 1996:713469 CAPLUS
DOCUMENT NUMBER: 126:131144
TITLE: Proof of a reversible, pairwise hydrogen transfer during the homogeneously rhodium(I)-catalyzed hydrogenation of α,β-unsaturated carboxylic acid derivatives with in situ NMR spectroscopy and parahydrogen

AUTHOR(S):

CORPORATE SOURCE:

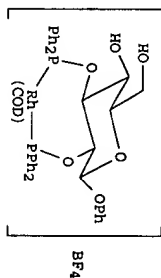
SOURCE:

PUBLISHER:

DOCUMENT TYPE:

LANGUAGE:

AB Hartum, Andreas; Selke, Ruediger; Bargon, Joachim
Institut für Theoretische und Physikalische Chemie,
Universität Wegelestrasse, Bonn, D-53115, Germany
Angewandte Chemie, International Edition in English
(1996), 35(21), 2505-2507
CODEN: ACHLEV; ISSN: 0570-0833
VCH
Journal
English



AB

The hydrogenation of Me acrylate with p-H₂ in presence of rhodium complex (I) catalyst was studied as an example of pairwise exchange of the geminal protons in the olefinic starting material. From the beginning of the hydrogenation, polarization signals are detected in the reactant, which are superimposed by usual reactant NMR signals. The observed polarization pattern reveals the formation of regenerated reactant, which must result from a pairwise p-H₂ transfer into the geminal positions of the double bond.

REFERENCE COUNT: 14

THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 5 OF 7 CAPLUS COPYRIGHT 2004 ACS on STM
ACCESSION NUMBER: 1996:299686 CAPLUS
DOCUMENT NUMBER: 125:57703
TITLE: Heteronuclear polarization transfer using selective pulses during hydrogenation with parahydrogen

AUTHOR(S):

CORPORATE SOURCE:

SOURCE:

PUBLISHER:

DOCUMENT TYPE:

LANGUAGE:

AB Selective excitation of polarization (SEPP) technique is used for efficient polarization transfer to other nuclei by first transforming the rapidly magnetization of the parahydrogen-induced polarization (PHIP) polarized protons into in phase magnetization, followed by an INEPT or DEPT pulse sequence. These techniques were applied to the homogeneous hydrogenation of phenylacetylene (I) or 1-hexyne (II). The 13C NMR of I or II was obtained at 400 MHz by introduction of H₂ (parahydrogen enriched by previously passing over charcoal) into a spinning sample tube of CDCl₃ solution containing Rh(norbornadiene)(PPh₃) catalyst. The use of this in situ technique for the examination of catalytic hydrogenations was discussed.

L9 ANSWER 6 OF 7 CAPLUS COPYRIGHT 2004 ACS on STM
ACCESSION NUMBER: 1976:35798 CAPLUS
DOCUMENT NUMBER: 84:35798
TITLE: Surface reactivity of nickel and nickel hydride films as catalysts in parahydrogen conversion

AUTHOR(S):

CORPORATE SOURCE:

SOURCE:

PUBLISHER:

DOCUMENT TYPE:

LANGUAGE:

AB Frackiewicz, A.; Poleski, M.; Patczewska, W.
Inst. Phys. Chem., Pol. Acad. Sci., Warsaw, Pol.
Journal of Catalysis (1975), 40(2), 184-9
CODEN: JCTLAS; ISSN: 0021-9517
Journal
English

AB The kinetics of the p-H₂ conversion were studied on Ni and Ni hydride thin films as catalysts. The rate of conversion was measured by a conventional method at 1-30 torr and 165-195°K. The transformation of Ni into the hydride phase under the influence of atomic H was attested by observing the change of elec. resistance of the film. The transformation diminished 300-fold the rate of the para-ortho conversion, due to a decrease in the preexponential factor of the Arrhenius equation. The results are in keeping with the poisoning effect of "hydride" H in Ni or Pd hydrides already reported in hydrogenation reactions. The effect is discussed in terms of the surface heterogeneity of the hydrided Ni film. Nickel crystalline patches which are not transformed into hydride are suggested to be responsible for the residual activity. The Ni hydride areas are catalytically inactive, which can be explained on the basis of earlier proposals that the metal d-band is filled by 1s electrons from H atoms.

L9 ANSWER 7 OF 7 CAPLUS COPYRIGHT 2004 ACS on STN
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 ORIGINAL REFERENCE NO.: 58:8441e-9

TITLE: Microcatalytic studies of the hydrogenation of ethylene. I. The promoting effect of adsorbed hydrogen on the catalytic activity of metal surfaces
 AUTHOR(S): Hall, W. Keith; Hassell, J. A.
 SOURCE: Journal of Physical Chemistry (1963), 67, 636-43
 CODEN: JPCHAX; ISSN: 0022-3654

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 LANGUAGE: Journal

AB The enhanced activity of Cu-Ni alloy catalysts, brought about by pretreatment with H, results from alteration of a surface property; it is not a bulk effect as previously supposed. The activity difference is maintained at sub-zero reaction temps., even in a flowing stream of H. The metals of the first transition series were surveyed. Fe, Co, and Ni are poisoned by activated H chemisorption, while Cu and Cu-Ni alloys are promoted. Small amounts of O left within the catalysts following reduction do not alter their activities substantially. When H was substituted for He as carrying gas, the ortho-para-hydrogen conversion could be measured concomitantly and was affected by pretreatment in the same way as the ethylene hydrogenation. The rates of these two reactions were generally correlative, but it was also observed that the ortho-para conversion was catalyzed, rather than poisoned, by the carbonaceous residues left from the hydrogenation. Similar behavior was observed for the H₂-D₂ exchange. The activity variations result from alteration of the ability of the catalyst to activate H. Studies of the interaction of C₂H₄ with the surfaces did not show a correlation with pretreatment, as C₂H₆ was produced only on H-treated surfaces, regardless of the catalyst composition. These results, nevertheless, provide some insight into the situation on the surface during hydrogenation.

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